

19-7810



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③

**D212-664-101TRN**  
**Job Sheet 199267**



Part No: D212-664-101TRN

Job Qty: 1 pcs

Part Name: Crosstube Turning Detail



Part Weight: 0 lbs

Status: New

Priority: Medium

Job Created: 8/15/19

Job Tracking No:

Due Date: 9/17/19

Created By: Marie Lajeunesse

Type: Stock

Description:

**Note:** DWG REV E IPP Rev:A 08-03-06 new issue DD verified by:ec IPP Rev B 08.04.02 removed Polish EC verified by: DD

Ship Via:

### Bill of Materials

### Job Routing

| Op No | Operation            | Qty   | Start Date | Due Date | Standard  |         | Workcenter/Supplier   |  | Lead Time | Sign-off          |
|-------|----------------------|-------|------------|----------|-----------|---------|-----------------------|--|-----------|-------------------|
|       |                      |       |            |          | Setup Hrs | Run Hrs | Workcenter / Supplier |  |           |                   |
| 100   | Mori Seiki TL-40 - 1 | 1 pcs | 9/17/19    | 9/17/19  | 1.00      | 2.38    | Mori Seiki TL-40 - 1  |  |           | DAS 66 2019/09/10 |
| 110   | QC 2                 | 1 pcs | 9/17/19    | 9/17/19  | 0.00      | 0.00    | QC 2 - 1              |  |           | 9-89              |
|       |                      |       |            |          |           |         | QC 2 - 12             |  |           |                   |
|       |                      |       |            |          |           |         | QC 2 - 14             |  |           |                   |
|       |                      |       |            |          |           |         | QC 2 - 17             |  |           |                   |
|       |                      |       |            |          |           |         | QC 2 - 19             |  |           |                   |
|       |                      |       |            |          |           |         | QC 2 - 2              |  |           |                   |
|       |                      |       |            |          |           |         | QC 2 - 20             |  |           |                   |
|       |                      |       |            |          |           |         | QC 2 - 22             |  |           |                   |
|       |                      |       |            |          |           |         | QC 2 - 23             |  |           |                   |
|       |                      |       |            |          |           |         | QC 2 - 25             |  |           |                   |
|       |                      |       |            |          |           |         | QC 2 - 32             |  |           |                   |
|       |                      |       |            |          |           |         | QC 2 - 33             |  |           |                   |
|       |                      |       |            |          |           |         | QC 2 - 35             |  |           |                   |
|       |                      |       |            |          |           |         | QC 2 - 39             |  |           |                   |
|       |                      |       |            |          |           |         | QC 2 - 4              |  |           |                   |
|       |                      |       |            |          |           |         | QC 2 - 40             |  |           |                   |
|       |                      |       |            |          |           |         | QC 2 - 44             |  |           |                   |
|       |                      |       |            |          |           |         | QC 2 - 45             |  |           |                   |
|       |                      |       |            |          |           |         | QC 2 - 48             |  |           |                   |
|       |                      |       |            |          |           |         | QC 2 - 49             |  |           |                   |
|       |                      |       |            |          |           |         | QC 2 - 50             |  |           |                   |
|       |                      |       |            |          |           |         | QC 2 - 51             |  |           |                   |
|       |                      |       |            |          |           |         | QC 2 - 52             |  |           |                   |
|       |                      |       |            |          |           |         | QC 2 - 57             |  |           |                   |
|       |                      |       |            |          |           |         | QC 2 - 62             |  |           |                   |
|       |                      |       |            |          |           |         | QC 2 - 63             |  |           |                   |
|       |                      |       |            |          |           |         | QC 2 - 8              |  |           | DAS 66 2019/09/10 |
|       |                      |       |            |          |           |         | QC 2 - 66             |  |           | 9-89              |
|       |                      |       |            |          |           |         | QC 2 - 64             |  |           |                   |

|     |                            |       |         |           |                            |                              |
|-----|----------------------------|-------|---------|-----------|----------------------------|------------------------------|
|     |                            |       |         |           | QC 2 - 65                  |                              |
|     |                            |       |         |           | QC 2 - 5                   |                              |
|     |                            |       |         |           | QC 2 - 71                  |                              |
|     |                            |       |         |           | QC 2 - 73                  |                              |
|     |                            |       |         |           | QC 2 - 69                  |                              |
| 120 | Mori Seiki TL-40 - 1 - B4B | 1 pcs | 9/17/19 | 1.00 2.38 | Mori Seiki TL-40 - 1 - B4B | DAS<br>66 2019/09/11<br>9-89 |
| 130 | QC 2                       | 1 pcs | 9/17/19 | 0.00 0.00 | QC 2 - 1                   |                              |
|     |                            |       |         |           | QC 2 - 12                  |                              |
|     |                            |       |         |           | QC 2 - 14                  |                              |
|     |                            |       |         |           | QC 2 - 17                  |                              |
|     |                            |       |         |           | QC 2 - 19                  |                              |
|     |                            |       |         |           | QC 2 - 2                   |                              |
|     |                            |       |         |           | QC 2 - 20                  |                              |
|     |                            |       |         |           | QC 2 - 22                  |                              |
|     |                            |       |         |           | QC 2 - 23                  |                              |
|     |                            |       |         |           | QC 2 - 25                  |                              |
|     |                            |       |         |           | QC 2 - 32                  |                              |
|     |                            |       |         |           | QC 2 - 33                  |                              |
|     |                            |       |         |           | QC 2 - 35                  |                              |
|     |                            |       |         |           | QC 2 - 39                  |                              |
|     |                            |       |         |           | QC 2 - 4                   |                              |
|     |                            |       |         |           | QC 2 - 40                  |                              |
|     |                            |       |         |           | QC 2 - 44                  |                              |
|     |                            |       |         |           | QC 2 - 45                  |                              |
|     |                            |       |         |           | QC 2 - 48                  |                              |
|     |                            |       |         |           | QC 2 - 49                  |                              |
|     |                            |       |         |           | QC 2 - 50                  |                              |
|     |                            |       |         |           | QC 2 - 51                  |                              |
|     |                            |       |         |           | QC 2 - 52                  |                              |
|     |                            |       |         |           | QC 2 - 57                  |                              |
|     |                            |       |         |           | QC 2 - 62                  |                              |
|     |                            |       |         |           | QC 2 - 63                  |                              |
|     |                            |       |         |           | QC 2 - 8                   |                              |
|     |                            |       |         |           | QC 2 - 66                  | DAS<br>66 2019/09/11<br>9-89 |
|     |                            |       |         |           | QC 2 - 64                  |                              |
|     |                            |       |         |           | QC 2 - 65                  |                              |
|     |                            |       |         |           | QC 2 - 5                   |                              |
|     |                            |       |         |           | QC 2 - 71                  |                              |
|     |                            |       |         |           | QC 2 - 73                  |                              |
|     |                            |       |         |           | QC 2 - 69                  |                              |
| 140 | QC 8                       | 1 pcs | 9/17/19 | 0.00 0.00 | QC 8 - 12                  |                              |
|     |                            |       |         |           | QC 8 - 14                  |                              |
|     |                            |       |         |           | QC 8 - 17                  |                              |
|     |                            |       |         |           | QC 8 - 20                  |                              |
|     |                            |       |         |           | QC 8 - 25                  |                              |
|     |                            |       |         |           | QC 8 - 3                   |                              |
|     |                            |       |         |           | QC 8 - 32                  |                              |
|     |                            |       |         |           | QC 8 - 33                  |                              |
|     |                            |       |         |           | QC 8 - 35                  |                              |
|     |                            |       |         |           | QC 8 - 39                  |                              |
|     |                            |       |         |           | QC 8 - 4                   |                              |
|     |                            |       |         |           | QC 8 - 44                  |                              |
|     |                            |       |         |           | QC 8 - 45                  |                              |
|     |                            |       |         |           | QC 8 - 49                  |                              |
|     |                            |       |         |           | QC 8 - 58                  |                              |
|     |                            |       |         |           | QC 8 - 8                   |                              |
|     |                            |       |         |           | QC 8 - 9                   |                              |
|     |                            |       |         |           | QC 8 - 68                  |                              |
|     |                            |       |         |           | QC 8 - 67                  |                              |

|     |                             |       |         |           |                        |             |
|-----|-----------------------------|-------|---------|-----------|------------------------|-------------|
|     |                             |       |         |           | QC 8 - 1 (A)           | DAS         |
|     |                             |       |         |           | QC 8 - 47              | 47          |
|     |                             |       |         |           | QC 8 - 40              | 19-10-17    |
|     |                             |       |         |           | QC 8 - 52              | 9-89        |
|     |                             |       |         |           | QC 8 - 23              |             |
|     |                             |       |         |           | QC 8 - 57              |             |
|     |                             |       |         |           |                        |             |
| 145 | Crosstubes - 2 - B4B        | 1 pcs | 9/17/19 | 0.00 0.68 | Crosstubes - 1 - B4B   |             |
|     |                             |       |         |           | Crosstubes - 2 - B4B   |             |
|     |                             |       |         |           | Crosstubes - 3 - B4B   |             |
|     |                             |       |         |           | Crosstubes - 4 - B4B   |             |
|     |                             |       |         |           |                        |             |
| 150 | Crosstubes - 3 - B4B        | 1 pcs | 9/17/19 | 0.00 1.00 | Crosstubes - 1 - B4B   | TA 19-10-17 |
|     |                             |       |         |           | Crosstubes - 2 - B4B   |             |
|     |                             |       |         |           | Crosstubes - 3 - B4B   |             |
|     |                             |       |         |           | Crosstubes - 4 - B4B   |             |
|     |                             |       |         |           |                        |             |
| 160 | QC 7                        | 1 pcs | 9/17/19 | 0.00 0.00 | QC 7 - 10              |             |
|     |                             |       |         |           | QC 7 - 13              |             |
|     |                             |       |         |           | QC 7 - 14              |             |
|     |                             |       |         |           | QC 7 - 15              |             |
|     |                             |       |         |           | QC 7 - 17              |             |
|     |                             |       |         |           | QC 7 - 18              |             |
|     |                             |       |         |           | QC 7 - 19              |             |
|     |                             |       |         |           | QC 7 - 2               |             |
|     |                             |       |         |           | QC 7 - 28              |             |
|     |                             |       |         |           | QC 7 - 3               |             |
|     |                             |       |         |           | QC 7 - 30              |             |
|     |                             |       |         |           | QC 7 - 34              |             |
|     |                             |       |         |           | QC 7 - 36              |             |
|     |                             |       |         |           | QC 7 - 37              |             |
|     |                             |       |         |           | QC 7 - 41              |             |
|     |                             |       |         |           | QC 7 - 47              |             |
|     |                             |       |         |           | QC 7 - 48              |             |
|     |                             |       |         |           | QC 7 - 51              |             |
|     |                             |       |         |           | QC 7 - 58              |             |
|     |                             |       |         |           | QC 7 - 59              |             |
|     |                             |       |         |           | QC 7 - 60              |             |
|     |                             |       |         |           | QC 7 - 9               |             |
|     |                             |       |         |           | QC 7 - 68              |             |
|     |                             |       |         |           | QC 7 - 50              |             |
|     |                             |       |         |           | QC 7 - 67              |             |
|     |                             |       |         |           | QC 7 - 40              |             |
|     |                             |       |         |           | QC 7 - 24              | DAS         |
|     |                             |       |         |           | QC 7 - 43              | 76          |
|     |                             |       |         |           | QC 7 - 61              | 9-89        |
|     |                             |       |         |           | QC 7 - 81              |             |
|     |                             |       |         |           |                        |             |
| 170 | Packaging 3-1 - Stock - B4B | 1 pcs | 9/17/19 | 0.00 0.00 | Packaging 3 - 1 - B4B  |             |
|     |                             |       |         |           | Packaging 3 - 2 - B4B  |             |
|     |                             |       |         |           | Packaging 3 - 3 - B4B  |             |
|     |                             |       |         |           | Packaging 3 - 4 - B4B  |             |
|     |                             |       |         |           | Packaging 3 - 5 - B4B  |             |
|     |                             |       |         |           | Packaging 3 - 6 - B4B  |             |
|     |                             |       |         |           | Packaging 3 - 7 - B4B  |             |
|     |                             |       |         |           | Packaging 3 - 8 - B4B  |             |
|     |                             |       |         |           | Packaging 3 - 9 - B4B  |             |
|     |                             |       |         |           | Packaging 3 - 10 - B4B |             |
|     |                             |       |         |           | Packaging 3 - 11 - B4B |             |
|     |                             |       |         |           | Packaging 3 - 12 - B4B |             |
|     |                             |       |         |           | Packaging 3 - 13 - B4B |             |
|     |                             |       |         |           | Packaging 3 - 14 - B4B |             |
|     |                             |       |         |           | Packaging 3 - 15 - B4B |             |

|                |       |         |           |                        |               |
|----------------|-------|---------|-----------|------------------------|---------------|
|                |       |         |           | Packaging 3 - 16 - B4B |               |
|                |       |         |           | Packaging 3 - 17 - B4B |               |
|                |       |         |           | Packaging 3 - 18 - B4B |               |
|                |       |         |           | Packaging 3 - 19 - B4B |               |
|                |       |         |           | Packaging 3 - 20 - B4B |               |
|                |       |         |           | Packaging 3 - 21 - B4B |               |
|                |       |         |           | Packaging 3 - 22 - B4B |               |
|                |       |         |           | Packaging 3 - 23 - B4B |               |
|                |       |         |           | Packaging 3 - 24 - B4B | BB 11/29/2019 |
|                |       |         |           | Packaging 3 - 25 - B4B |               |
|                |       |         |           | Packaging 3 - 26 - B4B |               |
|                |       |         |           | Packaging 3 - 27 - B4B |               |
|                |       |         |           | Packaging 3 - 28 - B4B |               |
|                |       |         |           | Packaging 3 - 29 - B4B |               |
|                |       |         |           | Packaging 3 - 30 - B4B |               |
|                |       |         |           | Packaging 3 - 31 - B4B |               |
|                |       |         |           | Packaging 3 - 32 - B4B |               |
|                |       |         |           | Packaging 3 - 33 - B4B |               |
|                |       |         |           | Packaging 3 - 34 - B4B |               |
|                |       |         |           | Packaging 3 - 35 - B4B |               |
|                |       |         |           | Packaging 3 - 36 - B4B | DAS           |
| 180 QC 21 - SA | 1 pcs | 9/17/19 | 0.00 0.00 | QC 21 - SA - 21        | 21            |
|                |       |         |           | QC 21 - SA - 70        | 9-08          |
|                |       |         |           | QC 21 - SA - 53        |               |

NOV 29 2019

Part Op 100 - (Mori Seiki CNC Lathe Large) 1- Fill tube with sand & install plugs 212-141 on both ends as per Folio FA113 3- Turn  
 Descriptions: first taper section on both side as per folio FA113

110 - (QC2- Inspect parts off machine FAI/FAIB) (QC2- Inspect parts off machine FAI/FAIB)

120 - (Mori Seiki CNC Lathe Large) 1- Turn second taper on both side 4- Scribe part # and batch # using vibrating stylus  
 on the cuff as per Dwg D212-664-141

130 - (QC2- Inspect parts off machine FAI/FAIB)

140 - (QC8- Inspect parts - second check)

145 - (Crosstubes) GRIND ONLY TRANSITION LINES SMOOTH LONGITUDE WAY.

150 - (Crosstubes) 1- handfinish X-TUBE INSIDE AND OUT

160 - (QC7-Inspect Chemical Conversion Coat)

170 - (Identify as per dwg & Stock Location: LOCATION : LG014

180 - (QC21- Final Inspection - Work Order Release)

## Job BOM

| Part / Item | Component Name     | Quantity     | Operation                | Container |
|-------------|--------------------|--------------|--------------------------|-----------|
| D6005-128   | Crosstube Material | 1 pcs (1 ea) | 100-Mori Seiki TL-40 - 1 | F139415   |

## Job Allocations

| Operation                | Component Part | Required | Inventory | Allocated |
|--------------------------|----------------|----------|-----------|-----------|
| 100-Mori Seiki TL-40 - 1 | D6005-128      | 1        | 17        | 0         |

## Part Specifications

Specifications could not be found.



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Plex 8/15/19 4:11 PM Dart.lajeunesse.marie

Container No: S212357



Part: D212-664-101TRN

Job No: 199267

Serial No/Batch: S212357

Revision: E

Inspector:

Exp Date:

Instructions:

Date: 09/10/19



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|                                                               |                     |              |
|---------------------------------------------------------------|---------------------|--------------|
| <b>DART AEROSPACE LTD</b>                                     | <b>Work Order:</b>  | 199267       |
| <b>Description:</b> Crosstube Assembly (205/212/412 High Fwd) | <b>Part Number:</b> | D212-664-141 |
| <b>Inspection Dwg:</b> D212-664-141 <b>Rev:</b> E             |                     | Page 1 of 2  |

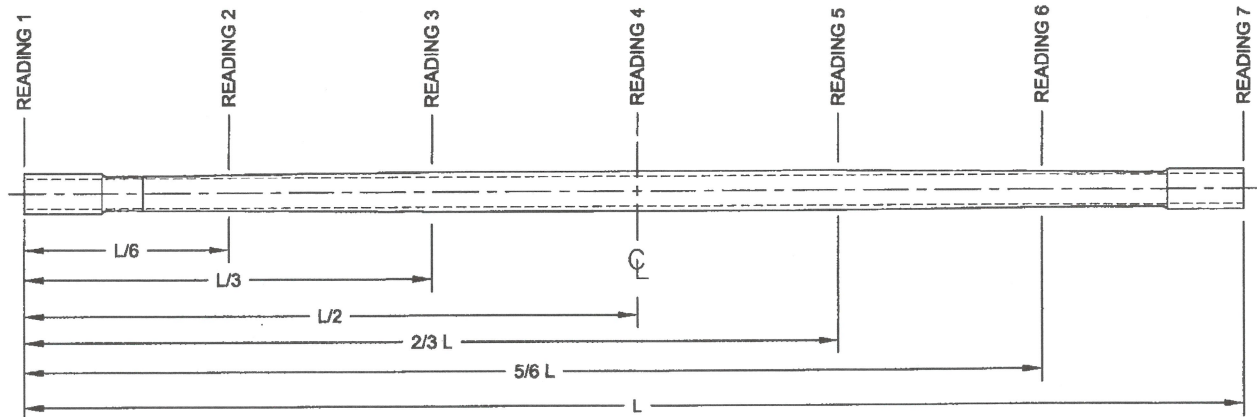
### FIRST ARTICLE INSPECTION CHECKLIST

|        | Inspection Sheet<br>Drawing Dimension | Tolerance     | Actual<br>Dimension | Accept | Reject | Method of<br>Inspection | Comments |
|--------|---------------------------------------|---------------|---------------------|--------|--------|-------------------------|----------|
| SIDE A | 0.200                                 | +/-0.010      | 0.202               | ✓      |        | CNC-08                  |          |
|        | R0.063                                | +/-0.010      | .063                | ✓      |        | RG                      |          |
|        | 2.740                                 | +0.005/-0.000 | 2.738               |        | ✓      | CNC-04                  |          |
|        | 5.097                                 | +/-0.030      | 5.110               | ✓      |        | CNC-08                  |          |
|        | 2.304                                 | +0.005/-0.000 | 2.309               | ✓      |        | CNC-04                  |          |
|        | 2.340                                 | +0.005/-0.000 | 2.345               | ✓      |        |                         |          |
|        | 2.398                                 | +0.005/-0.000 | 2.403               | ✓      |        |                         |          |
|        | 2.448                                 | +0.005/-0.000 | 2.453               | ✓      |        |                         |          |
|        | 2.498                                 | +0.005/-0.000 | 2.503               | ✓      |        |                         |          |
|        | 2.549                                 | +0.005/-0.000 | 2.554               | ✓      |        |                         |          |
|        | 2.599                                 | +0.005/-0.000 | 2.603               | ✓      |        |                         |          |
|        | 2.671                                 | +0.005/-0.000 | 2.675               | ✓      |        |                         |          |
|        | 2.701                                 | +0.005/-0.000 | 2.706               | ✓      |        |                         |          |
|        |                                       |               |                     |        |        |                         |          |
| SIDE B | 0.200                                 | +/-0.010      | .209                | ✓      |        | CNC-08                  |          |
|        | R0.063                                | +/-0.010      | .063                | ✓      |        | RG                      |          |
|        | 2.740                                 | +0.005/-0.000 | 2.742               | ✓      |        | CNC-04                  |          |
|        | 5.097                                 | +/-0.030      | 5.102               | ✓      |        | CNC-08                  |          |
|        | 2.304                                 | +0.005/-0.000 | 2.309               | ✓      |        | CNC-04                  |          |
|        | 2.340                                 | +0.005/-0.000 | 2.345               | ✓      |        |                         |          |
|        | 2.398                                 | +0.005/-0.000 | 2.403               | ✓      |        |                         |          |
|        | 2.448                                 | +0.005/-0.000 | 2.453               | ✓      |        |                         |          |
|        | 2.498                                 | +0.005/-0.000 | 2.503               | ✓      |        |                         |          |
|        | 2.549                                 | +0.005/-0.000 | 2.554               | ✓      |        |                         |          |
|        | 2.599                                 | +0.005/-0.000 | 2.604               | ✓      |        |                         |          |
|        | 2.671                                 | +0.005/-0.000 | 2.676               | ✓      |        |                         |          |
|        | 2.701                                 | +0.005/-0.000 | 2.706               | ✓      |        |                         |          |
|        | 126.514                               | +/-0.020      | 126.520             | ✓      |        | Tape                    |          |

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|                                                               |                                  |
|---------------------------------------------------------------|----------------------------------|
| <b>DART AEROSPACE LTD</b>                                     | <b>Work Order:</b> 199267        |
| <b>Description:</b> Crosstube Assembly (205/212/412 High Fwd) | <b>Part Number:</b> D212-664-141 |
| <b>Inspection Dwg:</b> D212-664-141 <b>Rev:</b> E             | <b>Page 2 of 2</b>               |

### WALL THICKNESS MEASUREMENT



| Location                | WALL THICKNESS MEASUREMENT (IN) |      |      |      | Deviation<br>$\Delta w$<br>(max-min) | TOLERANCE |
|-------------------------|---------------------------------|------|------|------|--------------------------------------|-----------|
|                         | w1                              | w2   | w3   | w4   |                                      |           |
| READING 1<br>L= 0"      | .367                            | .361 | .371 | .363 | 0.010                                | 0.048"    |
| READING 2<br>L= 21.09   | .217                            | .179 | .259 | .292 | 0.113                                |           |
| READING 3<br>L= 42.17   | .341                            | .337 | .355 | .363 | 0.026                                |           |
| READING 4<br>L= 63.25   | .373                            | .362 | .378 | .390 | 0.028                                |           |
| READING 5<br>L= 84.34   | .333                            | .337 | .353 | .356 | 0.023                                |           |
| READING 6<br>L= 105.43  | .236                            | .212 | .251 | .249 | 0.039                                |           |
| READING 7<br>L= 126.514 | .364                            | .359 | .377 | .384 | 0.025                                |           |

avg  
6.232 - 6.053  
6.345

### Calibration Result

Actual Block Thickness: 200-400

Sitescan 250 Measured Thickness: 200-400

|                            |                           |                              |
|----------------------------|---------------------------|------------------------------|
| <b>Measured by:</b> DAS 66 | <b>Audited by:</b> DAS 47 | <b>Preliminary Approval:</b> |
| <b>Date:</b> 2019/09/11    | <b>Date:</b> 19-10-17     | <b>Date:</b>                 |

| Rev | Date     | Change                             | Revised by | Approved |
|-----|----------|------------------------------------|------------|----------|
| C   | 07.05.28 | Dwg Rev updated (P/O D412-664-101) | KJ/JLM     |          |
| D   | 10.02.02 | Dimension 126.514 was 126.51       | KJ         |          |
| E   | 12.06.04 | Wall thickness form added          | KJ         |          |
| F   | 14.06.05 | Dwg Rev updated                    | KJ         |          |



| Item | Qty<br>-141 | Qty<br>-141B | Qty<br>-141F | Part Number     | Description                                             |
|------|-------------|--------------|--------------|-----------------|---------------------------------------------------------|
| 1    | X           |              |              | D212-664-141    | CROSSTUBE ASSEMBLY (205/212/412 HIGH FWD)               |
| 2    |             | X            |              | D212-664-141B   | CROSSTUBE ASSEMBLY (214 HIGH FWD)                       |
| 3    |             |              | X            | D212-664-141F   | CROSSTUBE ASSEMBLY (205/212/412 HIGH FWD)<br>(ANODIZED) |
| 4    | 1           | 1            | 1            | D6005-128       | CROSSTUBE                                               |
| 5    | 2           |              | 2            | D2893-1         | SUPPORT                                                 |
| 6    | 4           | 4            | 4            | D3595-063-450   | RUBBER CUSHION                                          |
| 7    |             | 2            |              | D5017-1         | SUPPORT                                                 |
| 8    | 4           | 4            | 4            | MS21920-25      | CLAMP (OR MS21920-26)                                   |
| 9    | A/R         | A/R          | A/R          | PROSEAL 890 B-2 | SEALANT, AMS-S-8802 CLASS B-2                           |

#### GENERAL NOTES:

- MATERIAL: MANUFACTURED FROM D6005-128  
FINISHED LENGTH = 126.514±0.020
- FINISH -141 & -141B: a) CHEMICAL CONVERSION COAT PER DART QSI 005 4.1  
b) PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2  
c) MASK UNDERSIDE OF CROSSTUBE AS SHOWN (ZN C6-2 / C6-3, HATCHED AREA)  
d) PAINT OUTSIDE PER DART QSI 005 4.2  
e) REMOVE MASKING AND APPLY MATTE CLEAR COAT
- FINISH -141F: a) ANODIZE PER MIL-A-8625, TYPE II, CLASS 1.  
b) ALODINE (DO NOT ETCH) PER QSI 005 4.1.2  
c) PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2  
d) MASK UNDERSIDE OF CROSSTUBE AS SHOWN (ZN C6-2 / C6-3, HATCHED AREA)  
e) PAINT OUTSIDE PER DART QSI 005 4.2  
f) REMOVE MASKING AND APPLY MATTE CLEAR COAT

**\*NOTE:** BETWEEN FINISHING OPERATIONS EXTREME CARE MUST BE TAKEN NOT TO CONTAMINATE OR DAMAGE FINISHED SURFACES.

- TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED
- UNITS: INCHES UNLESS OTHERWISE NOTED.
- BREAK SHARP EDGES: 0.005 TO 0.010 MAX.
- IDENTIFICATION: SCRIBE DART PART NUMBER "D212-664-XXX" AND BATCH NUMBER ON INSIDE OF CUFF USING VIBRATING STYLUS
- WEIGHT: D212-664-141/-141B/-141F = 33.6 lbs
- PART IS SYMMETRIC ABOUT CENTERLINE.
- EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS SCRATCHES, NICKS, OR DENTS. DEFECTS UP TO 0.005" MAY BE BLENDED OUT LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE.

#### MACHINING

- RUN CUTTER OFF PART. BLEND OUT EDGE LONGITUDINALLY, TRANSITION SHOULD BE SMOOTH.

#### BENDING

- BEND PROGRESSIVELY WITH A MINIMUM OF 3 PASSES. MAXIMUM TUBE FLATTENING DUE TO BENDING IS 7.2% (BASED ON O.D.) IN LOWER HALF OF R35.5 BEND AND 6% (BASED ON O.D.) ON REMAINING TUBE.
- LIQUID PENETRANT INSPECT OUTSIDE SURFACE OF CROSSTUBE PER QSI 038.

#### ASSEMBLY

- TO INSTALL D2893-1 / D5017-1 SUPPORT: ABRASE MATING SURFACE OF SUPPORT AND CROSSTUBE WITH 180-GRIT SANDPAPER AND REMOVE RESIDUE WITH MEK (OR EQUIVALENT). APPLY A 0.04" TO 0.07" THICK LAYER OF PROSEAL 890 CLASS B-2 (OR AMS-S-8802 CLASS B-2) SEALANT TO MATING SURFACE OF SUPPORT.
- INSTALL MS21920-25 CLAMPS (OR -26) WITH D3595-063-450 RUBBER CUSHIONS TO SECURE THE SUPPORT ON TOP SIDE OF THE CROSSTUBE. ENSURE CLAMPS ARE ON TOP SIDE OF CROSSTUBE.
- TORQUE CLAMPS 80 TO 100 IN-LB. ENSURE AT LEAST 1.5 THREADS SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING. PRIOR TO PACKAGING, RE-CHECK TORQUE ON CLAMPS AFTER PROSEAL 890 SEALANT HAS CURED FOR 72 HOURS.

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WORK ORDER

NO. 199267 MWS  
19-08-15

RELEASED  
2014-05-26  
WJ

|            |                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                          |              |
|------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|
| E          | ADD -141F, D5017-1 WAS D2893-1 (-141B), PROSEAL WAS MAGNOBOND, NOTE 2: ADD INSPECTION WINDOW, NOTE 11: ALLOW 7.2% CRUSH, NOTE 15: ADD 72HR CURE AND RETORQUE FOR PROSEAL, ADD SHEET 3, CLAMPS REVERSED TO PREVENT CHAPING (B7-2, B7-3), BEND HEIGHT TOL. NOW 0.25 WAS 0.13 (C1-3), INCORP. DEO D-1/-2/-3 | CP                                                                                                                                                                                                                                                                       | 14.04.01     |
| D          | REFORMAT/REVISE GENERAL NOTES/PART LIST; REORGANIZED VIEWS AND REFORMATTED DRAWING TO CURRENT STANDARDS; ADD -141B (ZN B4-2, D4-2); REMOVED REF & ADD TOLERANCES (ZN B4-3, C6-3, C8-3 & B6-3); RELOCATED FLAG #6 PER PAR 08-046 (ZN A5-3); MOVED TURNING DETAIL & UPDATED TOLERANCE TO SHEET 4           | RF                                                                                                                                                                                                                                                                       | 09.09.30     |
| C          | REMOVE -851 ABRASION STRIP; ADD MAGNOBOND 6398, CUSHION, REVERSE CLAMPS                                                                                                                                                                                                                                  | PH                                                                                                                                                                                                                                                                       | 07.03.08     |
| B          | ADD HOLES FOR COMPATIBILITY WITH BHT/AA SKIDTUBES                                                                                                                                                                                                                                                        | PH                                                                                                                                                                                                                                                                       | 05.02.04     |
| A          | NEW ISSUE                                                                                                                                                                                                                                                                                                | CP                                                                                                                                                                                                                                                                       | 00.12.12     |
| REV.       | DESCRIPTION                                                                                                                                                                                                                                                                                              | BY                                                                                                                                                                                                                                                                       | DATE         |
| DESIGN     | q                                                                                                                                                                                                                                                                                                        | <b>DART AEROSPACE LTD</b><br>HAWKESBURY, ONTARIO, CANADA                                                                                                                                                                                                                 |              |
| DRAWN      | q                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                          |              |
| CHECKED    | DW                                                                                                                                                                                                                                                                                                       | DRAWING NO.                                                                                                                                                                                                                                                              | REV. E       |
| MFG. APPR. | JH                                                                                                                                                                                                                                                                                                       | D212-664-141                                                                                                                                                                                                                                                             | SHEET 1 OF 5 |
| APPROVED   | JH                                                                                                                                                                                                                                                                                                       | TITLE                                                                                                                                                                                                                                                                    | SCALE        |
| DE APPR.   | JH                                                                                                                                                                                                                                                                                                       | XTUBE ASSY (205/212/412 HI FWD)                                                                                                                                                                                                                                          | NTS          |
| DATE       | 14.04.01                                                                                                                                                                                                                                                                                                 | COPYRIGHT © 2000 BY DART AEROSPACE LTD<br>THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD. |              |

8 7 6 5 4 3 2 1

D

C

B

A

D

C

B

A

13 14 15  
D2893-1 SUPPORT  
MS21920-25 CLAMP, 2X  
D3595-063-450 RUBBER CUSHION, 2X  
2 PL

14.00

D212-664-501  
BENT TUBE

2.0  
1.0

MASK AREA PRIOR TO PAINTING.  
REMOVE MASKING AFTER PAINT  
AND APPLY CLEAR COAT

2.0

SYM

**D212-664-141/-141F**  
**ASSEMBLY DETAIL**

**RELEASED**  
2014-05-26  
AND

MS21920-25  
CLAMP, REF  
14 15

D2893-1  
SUPPORT, REF

13  
APPLY PROSEAL  
BETWEEN D2893-1 AND  
CROSSTUBE

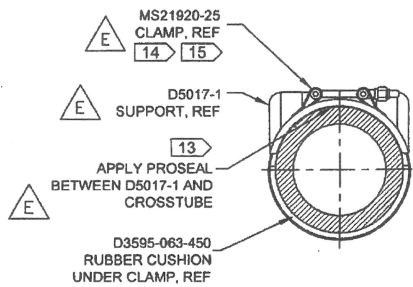
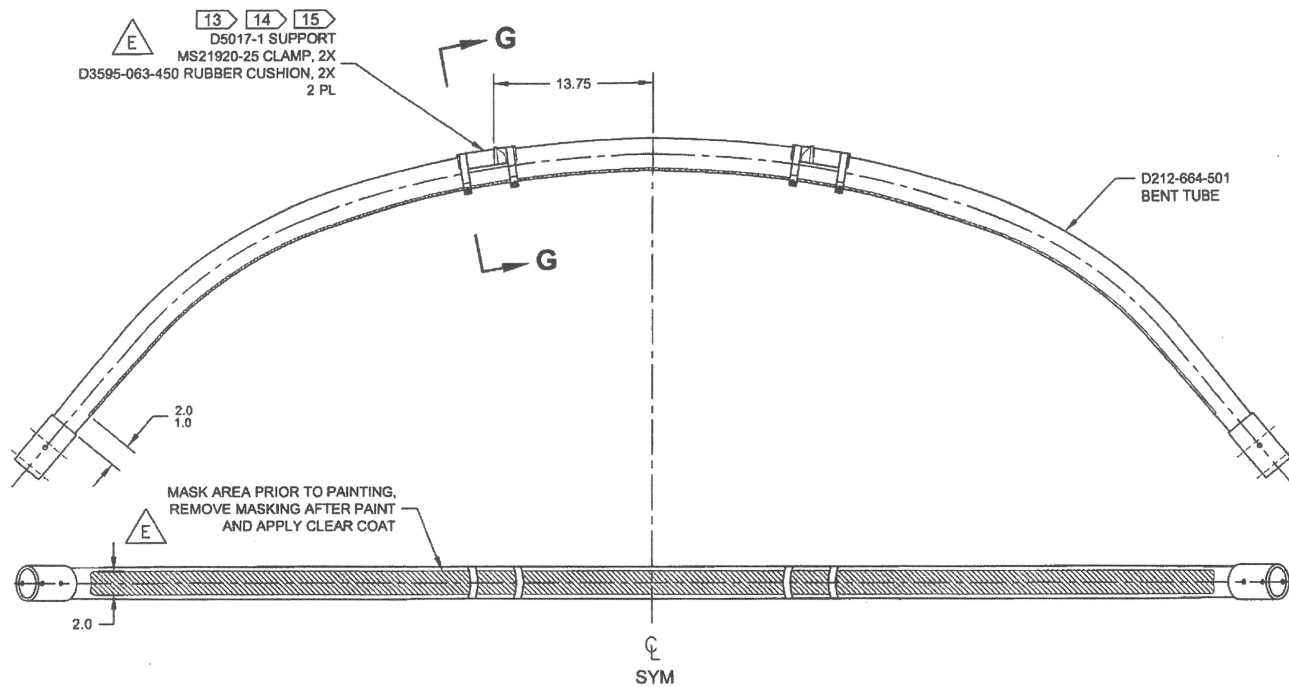
D3595-063-450  
RUBBER CUSHION  
UNDER CLAMP, REF

**SECTION A-A**  
SCALE 4X

|            |          |                                                                                                                                                                                                                                                                                                  |              |
|------------|----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|
| DESIGN     | 90       | <b>DART AEROSPACE LTD</b>                                                                                                                                                                                                                                                                        |              |
| DRAWN      | 90       | HAWKESBURY, ONTARIO, CANADA                                                                                                                                                                                                                                                                      |              |
| CHECKED    | 90       | DRAWING NO.                                                                                                                                                                                                                                                                                      | REV. E       |
| MFG. APPR. | 90       | D212-664-141                                                                                                                                                                                                                                                                                     | SHEET 2 OF 5 |
| APPROVED   | 90       | TITLE                                                                                                                                                                                                                                                                                            | SCALE        |
| DE APPR.   | 90       | XTUBE ASSY (205/212/412 HI FWD)                                                                                                                                                                                                                                                                  | NTS          |
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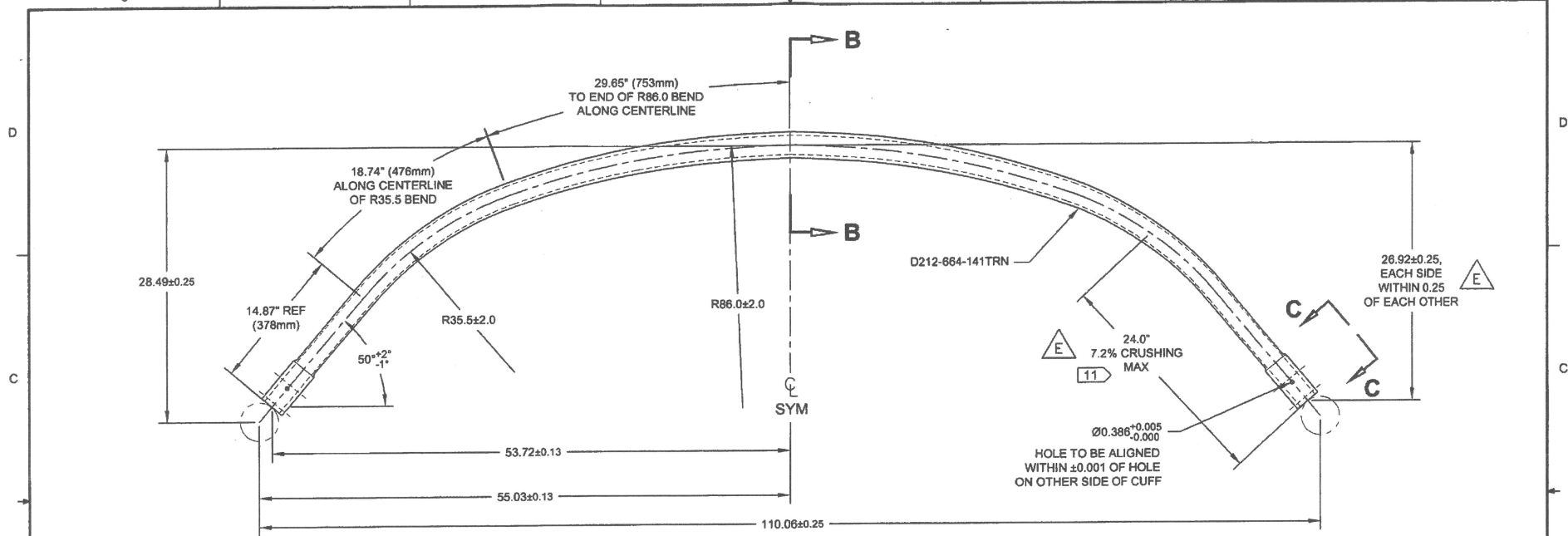
**SECTION G-G**  
SCALE 4X

**D212-664-141B**  
**ASSEMBLY DETAIL**

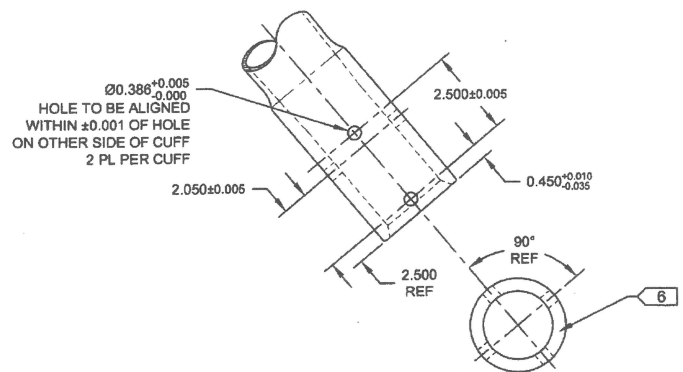
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|------------|----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|
| DESIGN     |          | <b>DART AEROSPACE LTD</b>                                                                                                                                                                                                                                                                |              |
| DRAWN      |          | HAWKESBURY, ONTARIO, CANADA                                                                                                                                                                                                                                                              |              |
| CHECKED    | DW       | DRAWING NO.                                                                                                                                                                                                                                                                              | REV. E       |
| MFG. APPR. |          | D212-664-141                                                                                                                                                                                                                                                                             | SHEET 3 OF 5 |
| APPROVED   |          | TITLE                                                                                                                                                                                                                                                                                    | SCALE        |
| DE APPR.   |          | XTUBE ASS'Y (205/212/412 HI FWD)                                                                                                                                                                                                                                                         | NTS          |
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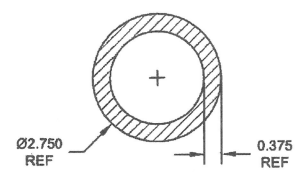
8 7 6 5 4 3 2 1



**D212-664-501**  
**BENDING AND DRILLING DETAIL** 11



**VIEW C-C: CUFF DETAIL**  
**SCALE 3X**



**SECTION B-B**  
**SCALE 4X**

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|            |          |                                                                                                                                                                                                                            |              |
|------------|----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|
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| DRAWN      | 90       | HAWKESBURY, ONTARIO, CANADA                                                                                                                                                                                                |              |
| CHECKED    | 90       | DRAWING NO.                                                                                                                                                                                                                | REV. E       |
| MFG. APPR. | 90       | D212-664-141                                                                                                                                                                                                               | SHEET 4 OF 5 |
| APPROVED   | 90       | TITLE                                                                                                                                                                                                                      | SCALE        |
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